Land Tenancy and Economic Efficiency
Selection of Ownership Structure of Agricultural Land in pre-modern China*

Liang ZHAO, Denggao LONG

Institute of Economics, Tsinghua University, Beijing, China

Abstract:

One dominant economic concept in China states that yeomanry is the most efficient and equitable land tenure system while tenancy system not only causes landlord to exploit tenant farmers but also leads to low production efficiency. However, this paper questions the arguments for a yeomanry system. Appling the theory of optimal ownership structure on farms, this paper discusses the total surpluses of different land ownership structures, yeomanry, wage contract, tenancy (share contract and fixed rental contract), and argues that the optimal land ownership structure can vary with the optimal operational scale, technological development, land quality, market development, etc. Quantitative analysis shows that in pre-modern China, higher tenancy rates appear in places with more developed markets, lower transportation costs, larger operational scale of land and smaller average ownership scale of land. In the comparison between tenants and yeomen of pre-modern China, tenancy economy shows its advantage in many aspects, such as production scale and profits. Reasons of tenancy's advantage are then discussed with the support of some cases.

Key Words: Tenancy system, Yeoman, Tenant farmer, Economic efficiency

* This paper was presented in "Third European Congress on World and Global History" (London, 2011).

1. INTRODUCTION

The dominant economic concept of classical western political economy and contemporary Chinese economics states that yeomanry excels tenancy, whether in terms of efficiency or equity. In observing Irish agriculture, English classical economist John Stuart Mill (1848) defended the efficiency of the yeoman land institution. He argued that the lease of landholdings to tenant farmers by the few well-endowed landowners would create widespread poverty due to exploitation which would negatively affect the economic efficiency. Mill held that only when significant economy of scale exists can yeomanry become an obsolete system in agriculture. Swiss classical economist Jean Charles Léonard de Sismondi, in his 1819 treatise *The New Principles of Political Economy*, also expressed his high opinion of yeomanry. Sismondi stated that "wherever there is yeomanry, there is comfort, safety, confidence toward future and sense of independence, therefore happiness and morality are maintained."[1]

The "land to the tiller" motto has been the aspiration for Chinese peasants for centuries and it survived as the dominant ideology from Republic of China to now. Chinese scholars commonly share three views on the yeomanry ideology. Firstly, "land to the tiller" promotes maximal security for farmers. These scholars consider tenants as factors of social instability, who are usually forcibly reduced into this socio-economic status. Some assume that the level of prosperity of the yeomanry function as the indicator of traditional society's rise and fall. Secondly, scholars assume that the relative lack of tax and burdens of the yeoman compared to the tenant encourages higher enthusiasm of production, and that freedom and flexibility of yeoman production made positive impacts on agricultural technology. Thirdly, exploitation of tenants by landlords hindered the development of the pre-modern Chinese economy.[2] The above mentioned views contribute to the Chinese people's fear of tenancy; that land rentals will create precarious livelihood for farmers. Thus, the Chinese government has been cautious in the liberalization of agricultural lands' transfers.

However, in reality, tenancy system has played an important role in Chinese economic history. It not only coexisted with yeomanry in pre-modern China, but also became the dominant land operation mode in many economically developed areas. This paper discusses and validates the prosperity of pre-modern Chinese tenancy system historically and explains the phenomenon with institutional economic theory. The second part of this paper will introduce enterprise's optimal ownership structure theory to analyze the factors that influence land right structure. The third part tests the influence of return of land investment and land scale on the tenancy rate. The

[1] Sismondi (1964) mentioned that: yeomen have the highest productivity among all kinds of tillers, because they plan the most and have the most experience. ..... In the meantime, in places where tenant system is implemented, lands can feed the highest population than other places, but the fertility of land can still maintain. At last, within all kinds of tillers, yeomen have the most incentive effect to business, because they are the richest.

[2] Hou Jianxin (2006) argues that Chinese landlords can use their privilege to cast about increasing tenants' payment, so tenants are always in disadvantage. Therefore agricultural capitalism was hard to come into being in pre-modern China, and modernization progress was blocked.

fourth part will compare real economic efficiencies of tenancy and yeomanry through several indexes. The fifth part explains the reason of tenancy's predominance.

2. EXPLANATION OF THE CHOICES OF FARM LAND OWNERSHIP STRUCTURE

Institutional economists explain the choice of land system via transaction costs. Some scholars, Steven N.S. Cheung (1969), Joseph E. Stiglitz (1974), Peng Meiyu(2004), etc., drew similar conclusions through different ways. When ignoring the transaction costs, yeomanry, hired laborer, share contract and fixed rental contract and other contractual arrangements have same efficiency in resource allocation; when taking transaction costs into account, optimal contract arrangement differs under different transactional efficiency, production function, prices of factors and risks.

Enterprise ownership theory, based on transaction cost theory, discusses the efficiency of resource allocation under different ownership structures and the determination of optimal ownership structure. Within this theory, tenants can be categorized as a type of farm entrepreneurs (Long Denggao, Peng Bo, 2010)[3]. The enterprise optimal ownership structure theory can be applied to the analysis of tenant farm enterprise.

By regarding each farm as an enterprise, one can assess an array of ownership structures each with a specific economic relation between landlords and tenants[4]. Harold Demsetz (1999) discussion on factors influencing enterprise's ownership structure, there are three factors that determine the ownership structure of a farm enterprise. The first factor is the land scale needed for the maximization of a farm's value. Increasing the scales of operation can lower production cost, but increase supervision and management cost; an optimal scale of minimal overall cost exists as equilibrium between the two poles. Therefore the larger the optimal operational scale of land, the less likely that a single farmer will operate the entire enterprise, and more likely that tenancy system will prevail. The second factor is that the profit potential derives from effective on-site control (potential control of farm operator's behaviors). The third factor is macroscopic and systematic control by the reigning government.

Oliver Hart (1995) discusses the enterprise's optimal ownership structure through total surplus of institutional arrangement. In equilibrium, each economic relationship will result in an ownership structure with the highest total surplus. Regarding different farms as different

[3] Both landlords and tenants can be seen as entrepreneurs. Tenants are not only labor providers, but also managers of farm enterprises. They can interact with market flexibly and adjust their resource allocation, production scale and production method according to their judgment and decision.

[4] Long Denggao, Peng Bo (2009) put forward that 1) under fixed-rent contract, tenants organize production and bear risk on their own, the rent is the price by which tenants purchase land usage right. 2) Under shared contract, landlords and tenants are cooperating. 3) Under wage contract landlords organize production and bear risk on their own, and hired labors' income is the price by which landlords purchase labors.

enterprises, according to Hart's theory, we assume M1 and M2 to be two farmers, and assume the following three kinds of resources:

a1: Land ownership right

a2: Land control right

a3: Labor

In the initial status, there are three following kinds of resource allocation:

1) Wage contract: M1 owns a1, a2. M2 owns a3. M1 need to hire M2, and the hiring cost is w.

In this situation, the investment of land will only be done by landlords. Suppose the investment of M1 toward land is i0, and the revenue is R(i0). Transactional cost is T0[5]. Then the reward afterward of M1 is R(i0)-w-i0. Suppose the labor cost paid by M2 is C0, then the reward afterward of M2 is w-C0.

In this situation, the total surplus of M1 and M2 is $S_0=R(i_0)-w-i_0-S_0+w-C_0=R(i_0)-i_0-T_0-C_0$.

2) Tenancy: M1 owns a1, M2 owns a2 and a3, i.e. M1 is the landlord and M2 is the tenants. M2 costs *P* to purchase a2. There are two situation of tenancy: post distribution of surplus (share contract), and prior distribution of surplus (fixed rental contract).

1. Post-distribution of surplus. The percentage of rent is t. Under this situation, both M1 and M2 have the impetus of investing the land. Suppose M1 invests i1 into the land, and pays transaction cost T1. M2 invest e2 into the land. Then the total revenue of land is R(i1+e1). The reward afterward of M1 is $tR(i_1+e_1)+P-i_1-T_1$. Suppose the labor cost of M2 is C1, then the reward afterward of M2 is $(1-t)R(i_1+e_1)-P-e_1-C_1$. The total surplus of M1 and M2 is $S_1=R(i_1+e_1)-i_1-e_1-T_1-C_1$.

The optimal investment choice of landlords and tenants are governed by the following considerations. In the situation of free exchange and M1 and M2 can coordination their behaviors, they have the common interest to maximize the net present value of the total surplus in their economic relation. The reason lies on, given any investment (i, e) that cannot maximize the present value of the total surplus, both sides can always find a (i, e) that can maximize the present value of total surplus and make an one-off payment transfer at time 0 to increase the welfare of both. Use (i^*, e^*) to represent the only optimal solution, the first-order condition of maximizing total surplus S=R(i+e)-i-e-T-C is:

$$\begin{aligned} \partial R(i^*+e^*)/\partial i^*=1 \\ \partial R(i^*+e^*)/\partial e^*=1 \end{aligned} \qquad (1)$$

[5] Transaction cost includes search cost (information cost) , negotiation cost, supervision cost, etc. It not only refers to cost in terms of money, but also in terms of time and energy.

2. Pre-distribution of surplus. The present value of fixed rent is R. Usually in these circumstances. Only landlord will invest on the land. Suppose the transaction cost of landlord is S2; M2 invest e2 to the land; the total revenue of the land is R(e2); the labor cost of M2 is C1. Then the reward afterward of M1 is R-T2. The reward afterward of M2 is $R(e_2)-e_2-C_2-R$. The total surplus of M_1 and M_2 is：$S_2=R(e_2)-e_2-T_2-C_2$

3) Yeomanry: M2 owns a1, a2, a3, i.e. M2 has purchased land from landlord. The cost of buying a1 and a2 is P', and the transaction cost is T3. The investment of M2 to the land is e3. The total revenue of land is R(e3). The labor cost of M2 is C3. Then the total surplus of M1 and M2 is $S_3=R(e_3)-e_3-C_3-P'+P'=R(e_3)-e_3-T_3-C_3$.

The theory of property right predicts that the optimal ownership structure is the one that maximizes the total surplus, i.e. under equilibrium statues, comparing functions (2)~(5), the ownership structure that brings the highest value of S will be selected by market.

$$S_0=R(i_0)-i_0-T_0-C_0 \quad (2)$$

$$S_1=R(i_1+e_1)-i_1-e_1-T_1-C_1 \quad (3)$$

$$S_2=R(e_2)-e_2-T_2-C_2 \quad (4)$$

$$S_3=R(e_3)-e_3-T_3-C_3 \quad (5)$$

Seen from the functions above, which ownership structure will be dominant depends on the relative value of i and e (The willing investment of the landlord and the farmer), R (the reward correspondently), T (The cost of landlord's supervision and transaction between landlord and tenants or hired labor), and C (The labor cost needed for tilling)

Transaction cost will rise with the rising of the risk that landlords face, therefore $T_0>T_1>T_2>T_3$. In fixed ownership structure, the transaction cost will rise in three situations: 1) when the optimal operational land scale increases, 2) when the landlord gets far away from his land and becomes hard to supervise his land, or 3) when the deficiency of active land market raises the cost of searching information of both sides. In the reign of Qing Emperor Yong Zheng, farmer Jin Xiuzhang, Fengxian County, Jiangsu Province, leased his land to Lu Shangyu and became a landlord. Then because Lu "owed rice rent and did not repay", the supervision cost and dunning cost and risk of Jin increased. Therefore Jin got back his land, tilled it himself and became a yeoman again. ("Hsingkwa Teben"[6] No.178). We can simply regard transaction cost the function of A (land scale), D (distance between landlord's habitation and his land), M (the activity of land transaction market). Then T=T(A, D, M).

In addition, land operational scale (A), technical level (L), geographic elements (G) (such as the character of land, the climate, etc.) the mobility and marketability of agricultural products (F) influence the revenue function R(i, e). In the reign of Qing Emperor Qian Long, farmer Qiao

[6] "Hsingkwa Teben": Formal documents of department of criminal cases in Qing Dynasty

Zihui, Zhong Zhuang village, Taiwan, found himself “Lack of strength to till”, so leased his own wasteland to someone who was more capable to operate the land. (Hong Liwan, 2002, Page 205). This transaction improved the technical skill on this land, changed the revenue function, therefore increased the total surplus of both sides. Theoretically, land system and other conditions fixed, a farmer will maximize his interest by a best investment, which means that i and e are endogenetic. Then R=R(A, L, G, F).

The labor cost (including opportunity cost) depends on the maximum revenue one can get from other available occupation. Suppose the labor’s maximum marginal income in nonagricultural field is U, we have C=C(U). During the reign of Qing Emperor Guang Xu, aboriginal resident A Laowansilao of Nanpu village in Taiwan leased his formerly self-tilling land to Huang Jiangli, a Han Chinese, because A Laowansilao “lacks strength to reclaim and till the land, and in any case moved to a faraway place”(Hong Liwan, 2002, Page 207). One reason drove this farm from a yeomanry farm to a tenant farm was that the cost of self-tilling became too high since landlord moved distance from the land.

Therefore, the optimal land right structure S can be simply regarded as depending on A, D, M, L, G, F, U. that is:

$$S\sim S(A, D, M, L, G, F, U), \quad S\in\{S_0, S_1, S_2, S_3\} \qquad (6)$$

It is obvious that, under different conditions, the optimal land ownership structure can be different, and yeomanry is not always the best. The following passage will use historical statistics to discuss two set of factors influencing the selection of land ownership structure: 1) the mobility and marketability of agricultural products, and 2) land scales.

3. FACTORS INFLUENCING THE SELECTION OF LAND RIGHT STRUCTURE

3.1 The return on land investment

Though investment return on land is usually lower than on urban industries, the low risk makes land sometimes a better investment choice. As the most stable asset, land has the character of “Peace of mind from fire and water hazards, safety from burglary and robbery." The price of land has long-term upward tendency because of its scarcity, but the demand of agricultural products is relatively stable in a certain time. Therefore under private land ownership system, with the accumulation of urban commercial capital, land became an investment good that provide reliable earnings and long-term security.

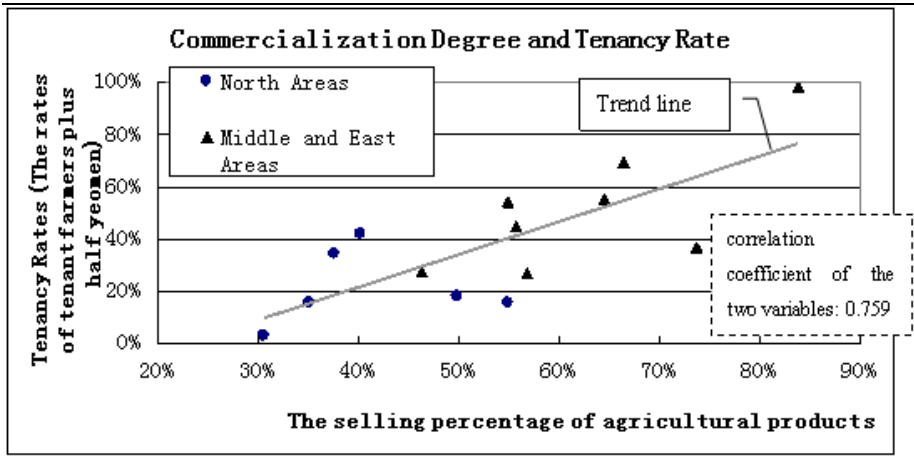
D.H.Perkins (1969) considered the main cause of the tenancy rates' regional difference in China as the volume of investment from people out of village (“Absent landlords”). In 1930s, within the tenant lands all over China, those owned by absent landlords had a proportion of 3/4 on average. (D.H. Perkins, 1969, Page 117). The funding of absent landlords were usually from non-agricultural industries, so there were mainly two factors determining the volume of

investment from absent landlords: 1) the advancement of non-agricultural industries; 2) the attraction of land investment, i.e. the returning rate. According to CIESR(1939)'s investigation, in Wuxing County, different land investment returns in different areas caused tenancy rates' distinction. Those areas more favorable on land investment had more developed tenancy. On the contrary, the area of Yuanjiahui had the lowest tenancy rate because of "low terrain, barren fields, and narrow market".

There are two factors that influence the land investment return. One is agricultural products' commercialization, impacted by transportation's convenience and market's development level. Zhao Gang(1997) put forward that market is the prerequisite of land tenancy system. The tenant land system developed because landlords were able to commercialize land rent incomes (originally as a way to resolve the conflict between total dependency on income from farm production and diversity of consumption demands). The other is lands' productivity. Li Deying (2006) studied tenancy in counties of Chengdu Plain and discovered that tenancy rates were well related to geographic locations and land quality. Areas that had fertile lands and were close to cities had high tenancy rates, while remote areas had lower tenancy rates. Xia Mingfang (2000) argues that the development of tenancy in one area had close relation to its ecological environment. Fertile lands and abundant products gave rise to high land investment return, thus gave rise to developed tenancy system. Areas with barren lands usually had more yeomen.

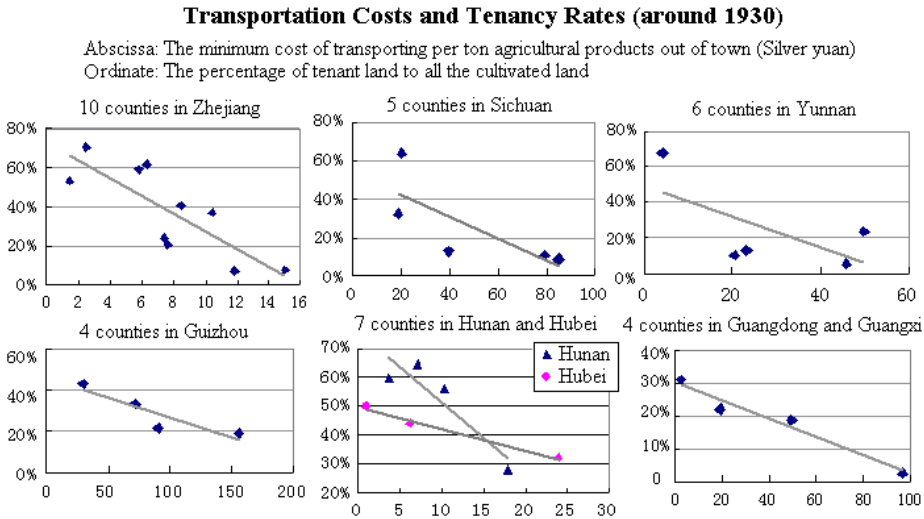
In Figure 1, the relation between tenancy rates and commercialization degrees in 17 counties in Republic of China shows that those areas with more developed agricultural market were more attractive to landlords' investment. The commercialization degrees in south areas were higher than in north areas. Transportation cost of agricultural products was one important factor that influenced the commercialization degree and return of investment. Figure 2 shows that except for Jiangxi and Jiangsu[7], the transportation costs and tenancy rates had negative correlation in all paddy areas. The lower the transportation cost was, the higher the land investment return was, and thus the higher the tenancy rate would be.

[7] There are only three counties in Jiangsu that had integrated data, with on apparent trend. The five counties in Jiangxi were regionalized into two regions and also show no trend.



Resource: John L.Buck, 1936

Figure 1 The relation between tenancy rates and commercialization degrees of 17 counties in 1921~1925 China



Resource: John L.Buck, 1937

Figure 2 The costs of transporting agricultural products to out of town and the tenancy rates

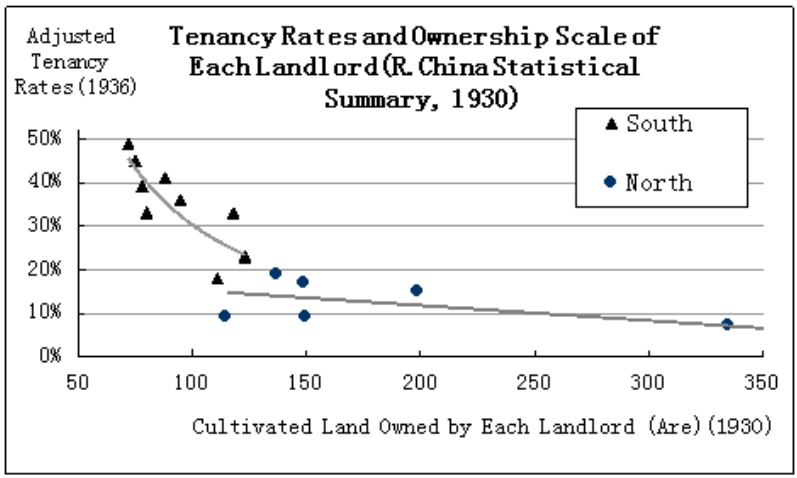
3.2 The scale of land ownership and the scale of land operation

The scale of land ownership and the scale of land operation have different mechanism of changing. Both of them are essential factors that influence tenancy rates (Will be discussed in Chapter IV). Suppose the dispersion degree (i.e. ownership scale owned by each landlord on average) is Ar, and the average operational scale per farm is A. If Ar>A, the ratio of tenant land to total land is (Ar-A)/Ar. If Ar<A, the ratio of tenant land to total land is (A-Ar)/A. Then the tenancy rate of land Tr can be shown as:

$$Tr = \begin{cases} (Ar-A)/Ar & Ar>A \\ (A-Ar)/A & Ar<A \end{cases} \qquad (7)$$

Other condition fixed, if land ownership scale is more dispersed than land operational scale, tenancy rates have negative correlation to the dispersion degree of land right, and have positive correlation to the land operational scale, because tenancy plays the role of concentrating dispersed land. If land ownership scale is more concentrated than land operational scale, the more concentrated land right is, the higher the tenancy rate will be, because land right owner is not capable to till the extra land beyond his ability.

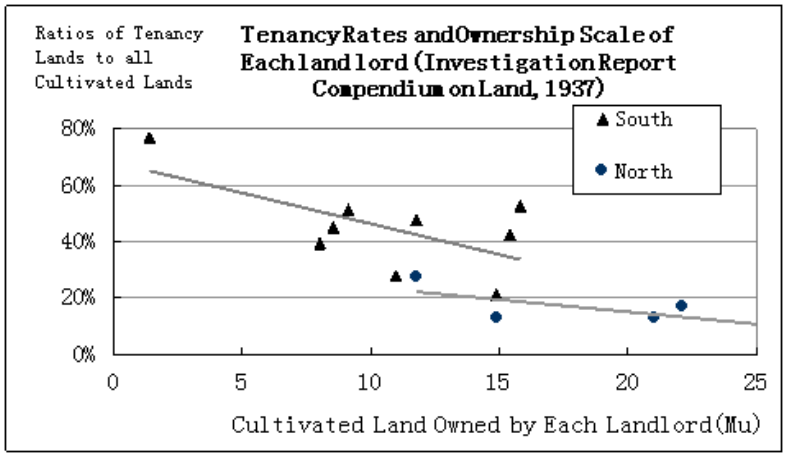
Figure 4 and Figure 5 shows the relations between tenancy rates and land ownership scales in 16 Chinese provinces in 1920s. In general, tenancy rates were negatively correlated to average ownership scale per landlord, while in southern China; the negative correlation was greater because of the more concentrated land ownership.



Resources: "Adjusted tenancy rates" [8]is from Zhao Gang, 2005, Page 73; "Cultivated land owned by each landlord" is from Statistical Bureau, Accounting and Statistics, National Government, 1936, Page 469-483

Figure 3 Tenancy rates and land ownership dispersion (Data from R. China Statistical Summary)

[8] "Adjusted tenancy rate" refers to the rate of original tenancy eliminating permanent lease.



Resource: Land Commission, 1937, Page 36. 1 Mu = 0.15 Are [9]

Figure 4 Tenancy rates and land right dispersion (Data from Investigation Report Compendium on Land) [10]

As to operational scales, according to the following figure, the tenancy rates of both Wheat Areas and Paddy Areas had positive correlation with land operational scales per labor. The positive correlation was higher in Wheat Areas than in Paddy Areas. According to Function (7), these positive correlations show that the land ownership distributions were more dispersed than operational scales in Pre-modern China.

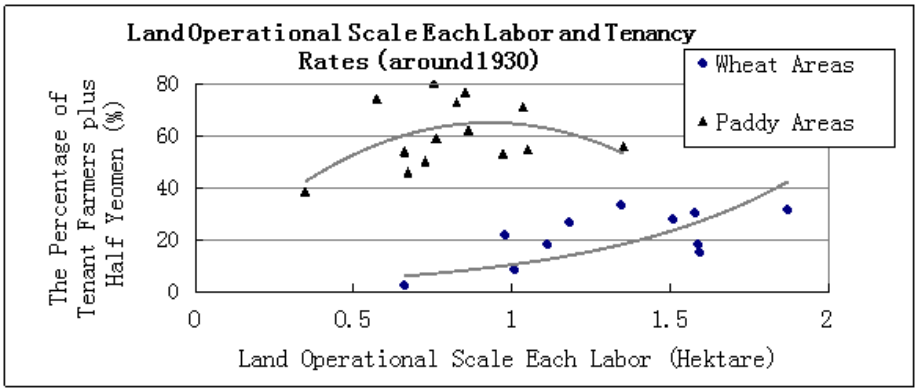


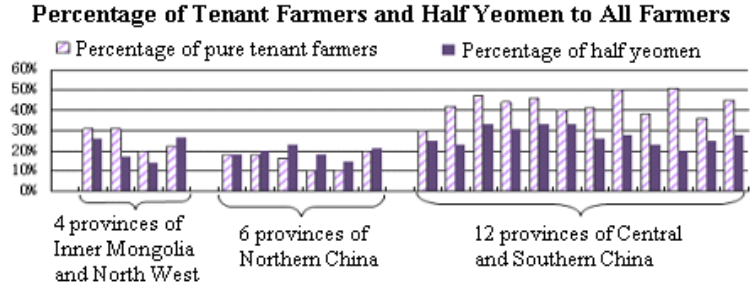
Figure 5 Land Operational Scales Each Labor and Tenancy Rates

[9] "Are" is a unit of land area. One Are = 100 sq. m.

[10] The data is from Buck (1937, Page 57~59 and Page 298) Wheat areas include Gansu, Ningxia, Qinghai, North Shaanxi, Suiyuan, Shanxi, Hebei, Shandong, North Jiangsu, North Henan, North Anhui. Paddy areas include South Anhui, South Henan, South Shaanxi, jiangxi, Zhejiang, Hunan, Sichuan, Hubei, Guangxi, Yunnan, Guizhou, Guangdong, Fujian.

4. THE COMPARISON OF EFFICIENCY BETWEEN YEOMANRY AND TENANCY

In the traditional understanding, the formation of land tenancy was because of farmers' reluctantly losing their lands in hardship time. Given this point stands, the tenancy rates must be higher in those places where the natural calamities were more serious, and productivity lower. However, that was not the case. The figure below shows that the tenancy rates (The percentage of tenants and semi-tenants) was much higher in developed areas than in less developed areas. Northern China, where the economy was relatively backward, had the least tenancy rate, while southern China, where the economy was more advanced, had higher tenancy rates.



Source: Accounting and Statistics, National Government, 1937, Page 330

Figure 6 Percentage of tenant farmers to all the farmers: 1936[11]

This tendency could also be seen in single areas. Areas with advanced economy usually had more developed tenancy system. According to Table 1, among the four areas in Wuxing County of Zhejiang, Yuanjiahui had the most backward agricultural economy, and the highest ratio of yeomen. Nanxun was the most advanced area, and the tenancy system of it was the most developed, with only 8.72% of all farmers being yeomen and other nearly 90% being tenant or semi-tenant farmers.

Table 1 Percentage of Yeomen, Semi-tenant Farmers and Tenant Farmers in 4 Areas in Wu Xing County

Areas	Yeomen	Semi-tenant Farmers	Tenant Farmers
Na Xun	8.72%	82.56%	5.81%
Ling Hu	33.64%	58.88%	2.34%
Shuang Xiu	55.56%	40.43%	0.31%
Yuan Juahui	58.38%	35.53%	1.52%

Resource：CIESR(1939)

[11] Provinces from left to right in turn are: Inner Mongolia and Northwest (Chahar, Suiyuan, Ningxia, Qinghai), Northern China (Gansu, Shaanxi, Shanxi, Hebei, Shandong, Henan), Central and Southern China (Jiangsu, Anhui, Zhejiang, Fujian, Guangdong, Jiangxi, Hubei, Hunan, Guangxi, Sichuan, Yunnan, Guizhou)

Another example is Guixian Town, Danyang County in Jiangsu. It was the wealthiest town among the 11 areas in Danyang and had the highest productivity in most kinds of agricultural products. It also had the highest proportion of well-off farmer families in Danyang. In the mean time, Gui Xian's tenancy rate were the highest in Danyang. 65 percent of farmers are tenant and semi-tenant farmers, which was much higher than any other places in Danyang (Zhang Hanlin, 1920, Page 789-835). Xuxi had the highest agricultural productivity among all the 5 areas of Jiaxing County in Zhejiang, while the percentage of tenant and semi-tenant farmers were 94.82%, mush higher than other 4 areas (Feng Zigang, 1936, Page 236).

Compared to yeomanry, tenancy system excelled in following two aspects.

1. The scale of labor and farm land

John L.Buck (1936) was engaged in a investigation and statistic toward the rent categories, farm areas, family scales, returns, land prices and working efficiency etc. of 2866 farms in 17 counties of 7 provinces in China. Comparing family manpower and farm scales among yeomen, semi-tenant farmers, and tenant farmers, we have the results as Table 2 (the numbers of counted farms as weight number):

In Table 2, "Farm Area" means the whole farm land, including cultivated lands and all the other lands belonging to farm owners. "Crop Are" is a unit measuring the total Ares of land harvesting all kinds of crops in all seasons in a year. (For example, if there is one Are of land which harvests two seasons of crops. Then this land is counted as 2 Crop Ares.) Labors of different ages and genders are represented with the amount of adult males through Atwater's Scale. (For example a lady in the age of 15~16 can be represented as 0.8 unit of adult male) (John L.Buck,1936, Page 19). The advantage of this kind of statistics is that the amounts of production factors are standardized and become easy to compare.

Table 2 The Comparison of Land Operational Scales and labors Among Yeomen, semi-tenant farmers and tenant farmers (Source: "Chinese Farm Economy")

	15 Counties on Average			7 Counties in Northern China			8 Counties in Central and Eastern China		
	Yeomen	semi-tenant farmers	Tenant farmers	Yeomen	semi-tenant farmers	Tenant farmers	Yeomen	semi-tenant farmers	Tenant farmers
Family Scales	4.38	4.52	4.33	4.44	4.56	5.74	4.33	4.47	3.98
Farm Areas	39.39	35.04	61.78	44.82	41.86	134.84	33.28	27.86	29.23
Crop Areas each person	25.15	26.06	34.44	30.07	29.47	64.24	19.62	22.47	21.16

The unit of "Family Scales" is "Adult Male Unit". The unit of "Farm Areas" is "Local Mu"(One Local Mu = 0.15 Are)

Viewing the whole nation, there was no significant difference in the family labor scale among yeomen, semi-tenant farmers and tenant farmers. In north, tenant families had more manpower on average, while in south, the semi-tenant families. Regarding farm scale, yeomen had the least Crop Are per labor in both Northern and Southern parts. Table 3 shows that semi-tenant farmers had the largest household sizes in the Northern, Southern or the entire nation.

Table 3 The average household sizes of farmers

	Yeomen	Semi-tenant farmers	Tenant Farmers
Entire China	5.38	5.68	4.76
Northern China	5.55	5.83	4.97
Southern China	5.12	5.61	4.74

Source: Hou Yangfang, 2001, Page 515

Table 4 shows the manpower and land scale of each farmer family in four south counties in 1930s. Through these specific areas, we can also see that semi-tenant farmers had the largest sizes of family and areas of land on average (Jiaxing's tenant farmers had the largest size)

Table 4 The average household sizes and land scales of farmers in four counties

Area	The average household sizes			Land operational scales（Mu）		
	Yeomen	semi-tenant farmers	Tenant Farmers	Yeomen	semi-tenant farmers	Tenant Farmers
Kunyang, Yunnan（1932）	5.6	6	5	10.6	11.2	4.8
Wuxing, Zhejiang(1938)	4.76	5.17	4.47	6.11	10.01	9.15
Jiaxing, Zhejiang（1936)	3.37[12]	3.68	3.5	11.44	10.98	11.75
Danyang, Jiangsu（1930)				10.6	11.2	4.8

Source: Su Rujiang, 1932; CIESR, 1939; Feng Zigang, 1936; Zhang Hanlin, 1930

Li Deying (2008) has drawn to a similar conclusion to the tenant operation in Wenjiang County of Sichuan in the period of the Republic of China. The average farm areas and crop areas of tenant farmers were apparently larger than yeomen and semi-tenant farmers, and the soil quality of tenant farms were better than yeoman farms in general. "The average land value per Mu of yeomen was 434 yuan, while that of tenant farmers was 502 yuan. That was because tenant farmers were usually willing to rent upper level lands." (Li Deying, 2009)

As to Northern China, Shi Jianyun (1998) had found similar tendency in the study of tenant operation in Northern China. The statistical conclusion of John L.Buck (1937) was that the farm operational areas of tenant farmers in Northern China (including semi-tenant farmers) were larger than yeomen. Within tenant farmers, the operational scales of semi-tenant farmers

[12] The unit of "The average household sizes" of Jiaxing is Adult Male Unit

were higher than pure tenant farmers. Another instance is the investigation to the areas along the Pinghan Railway in 1930s. In the 34 investigated spot in Hebei and Henan along the Pinghan Railway, eliminating the great families which owned lands of more than 100 Mu, each yeoman operated 2.92 Mu of land on average, and each tenant or semi-tenant farmer 3.13 Mu.

2. Earnings and profits

Making a weighted average to the incomes and profits of yeomen, semi-tenant farmers and tenant farmers in different areas (data from "Chinese Farm Economy"), we can see that tenant farmers had highest operational efficiency, while semi-tenant farmers the second and yeomen the lowest. The Farm Labor Earning and profits per Crop Are of tenant farmers were greater than that of yeomen and semi-tenant farmers. In Wutai County of Shanxi, the Farm Labor Earning per tenant farm was even three times greater than that per yeoman farm, because of the method of "enterpriseal tenant cultivation" prevailed at that time[13]. From the Operator's Labor Earning, tenant farmers had the highest labor efficiency.

Table 5 The Comparison of the earnings and profits (Yuan)[14]

	15 counties on average			7 counties in North			8 counties in East and Center		
	Yeomen	Semi-tenants	Tenants	Yeomen	Semi-tenants	Tenants	Yeomen	semi-tenants	Tenants
Farm Labor Earning	104.7	111.9	181.4	78.6	80.9	208.6	141.2	144.7	169.3
Operator’s Labor Earning	103.8	114.9	140.4	78.5	83.1	95.5	139.2	148.3	160.5
profits per Crop Are	1.5	1.6	3.0	0.1	0.4	1.0	2.6	3.1	4.3

Comparing the net profit per Are of three kinds of farmers in the five areas in Jiaxing County, the semi-tenant farmers were the highest in three areas while the yeomen highest in the other two.

[13] The Farm Labor Earning of Wutai Shanxi of Tenants is 392.91 yuan, while that of yeomen is 103.15 yuan.

[14] "Farm Labor Earning" means the sum of tenants' earning and landlords' earning. It can reflect lands' operational efficiency. "Operator" means the farmer engaging in real operation of farm. "Operator's Labor Earning" means the annual income of operators, that is Farm Labor Earning minus Landlord's earning.

Table 6 Net profits per Are in the five areas in Jiaxing county (Yuan)

	Yuxi Town	Taian Village	Baoda Village	Hannan Village	Tantang Village
Yeomen	3.19	2.6	2.54	1.92	4.16
Semi-tenant farmers	4.52	2.78	2.42	2.71	3.82
Tenant famers	4.35	2.47	2.17	1.62	4.01

Source: Feng Zigang, 1936, Page 537-541

According to Li Deying (2008)'s comparison of the earnings and profits of different kinds of farms in Chengdu Plain in the period of Republic of China, if the opportunity cost, of which yeomen using the land of their own, is counted (that is counting the investment interests of land as expenses), tenant farmers had much more abundant profit than yeomen. Farm Operator Earning per tenant farmer in ten counties in Chengdu Plain was 927 yuan, while that per yeomen was 639 yuan. Pure profits per Mu were 20.28 yuan for tenant farmers and 12.61 for Yeomen. That is to say, for a tiller who owned no land at that time, renting a land was more profitable than buying one, even though he may have enough capital to purchase land. This can be verified by the relation between the well-being condition and tenant land proportion.

According to traditional view, farmers tend to purchase lands while their wealthes grow, and only farmers too poor to buy land will rent lands. However, historical materials show that sometimes renting lands was a better choice than buying lands. One example is Baiquan County and Yushu County in Northeast China, "rich farmers" and "middle farmers" had much more renting land than "poor farmers", and the former two had the highest areas of tenant land per family. Measuring the well-being level by land ownership, with the increasing of wealth, the areas of tenant lands were not always decreasing, but always increasing instead. In Baiquan County, the percentage of tenant lands was higher for "middle farmers" than for "poor farmers". In Yushu County, that percentage was higher for "wealthy farmers" than for "middle farmers". (Propaganda Department, Northeast Bureau, 1949, Page 19-44). Also, according to the investigation in Henan Province in 1933, in the four villages of Hui County, 48.6 percent of rich farmers rented land, while 15.9 percent of middle farmers and 35.6 percent of poor farmer rented land. In five villages of Xuchang, that percentage was 30.4% of rich farmers and 15.4% and 26.7% of middle and poor farmers. In six villages in Zhenping, that percentage of rich, medium and poor farmers were 58.3%, 55.8% and 30.9%. (Rural Reconstruction Committee, 1934, Page 59-61)

5. REASONS FOR TENANCY SYSTEM'S ADAPTABILITY AND DOMINANCE

1. Tenant system separates land's functions of capital and production factor and realizes the division between investors and users (Long Denggao, 2008). In the contracts of Ba County in

Sichuan, Cao Zhenglong, who was in need of money, pawned his land to Cousin Cao Zhengting for 102 taels of silver in the February of 1814. In the mean time, Cao Zhenglong signed another contract with Cao Zhengting to rent the same land to till with the annual rent of 5 qian[15]. Then the functions of capital and production factor of land were separated. This transaction equals to that Cao Zhenglong gained a loan with annual interest rate of 0.5% through land mortgage, and he himself keep the tilling right of the land. The loan interest rate was much lower with land mortgage than loan without mortgage. The similar contract cases in Ba County were as following:

Table 7 Contract cases in Ba County, in which lands were pawned and rented back

Date	Pawner, tenant	Pawnee, lessor	Pawn price	Annual rent	Equal to annual loan interest rate
1800.8	Zhu Yonghong	Yang Guanghe	100 taels	20 dan[16] paddy	10%[17]
1807.12	He Yuexing	Li Xinhua	90 taels	12 dan paddy	7%
1830.2	Kuang Zhao	He Yonggang	48 taels，deposit 2 taels	2 taels	4%
1838.3	Yuan Ze	Xie Sisen	4000 wen[18]	800 wen	20%

If lands are not allowed to rent, the only way for farmers to gain land is to purchase then, which would largely increase the threshold of tilling lands, and when farmers need financing to meet their urgent need, they can only sell their land.

Landlords and tenant farmers have different factor endowments. Tenant farmers have more manpower and capability to organizing the production, but relatively lack capital to buy land and tools. Landlords have more abundant capital, but their farm experiences are usually less than tenants. Yeomen have to manage capital and labor as well, but tenants and landlords can exert their factor endowments through various forms of enterprise. Therefore tenant system lowers tenants' investment burden and increase landlords' investment willing.

2. Tenant system optimizes the land operational scale.

Zhao Gang (1997, Page 53) put forward that one advantage of tenant system is that it increases the flexibility of production system and optimize the operational scale. In middle ages Europe, the scales of farm land right were usually large, but under the ancient technique, small farms were more efficient than large farms, so land owners were willing to transfer large land into

[15] “qian”: a Chinese unit of money

[16] “dan”: a Chinese unit measuring volumes of crops. 1 dou is about 70 kg.

[17] Estimated by 0.5 taels per Dan paddy (the price estimation comes from cases of Hsingkwa Teben No. 181 and No.204

[18] “wen”: a Chinese unit of copper coin

many small farms operated by different tenant farmers. (Zhao Gang, 1997, Page 53). In pre-modern China, the scales of land keep on changing in two different ways. 1) The scale of land ownership was more and more dispersed, because of the emerging of absent landlords, population burden, and the scarcity of land and the tradition of partible inheritance. (Ye Chunhui, 2008). The other is the changing of land operational scale. The optimal operational scale is determined by production cost and transaction cost. Enlarging land operational scale will on one hand decrease the average production cost due to scale effect (As APC in Figure 7), on the other hand will produce more contracts and frictions in land transaction, labor hiring and choosing of production manners, which brings more transaction costs (As ATC in Figure 7). The optimal operational scale is the one that causes the minimum sum of production cost and transaction cost.

The long-term small farm operation in Chinese history is the balancing between the two (See A0 in Figure 7). With the progressing of modern agricultural technology and information technology, the ideal farm operational scale is increasing (Zhao Liang, 2008) (As A1 in Figure 7). When optimal operational scale exceeds ownership scale, tenant system would exert its reversed flexibility. Small landlords can lease their lands to big tenants to form big farms, so that advanced agricultural technique can be used fully. We can see that there is big difference between effective systems of the land ownership scale and land operational scale, and tenant system enables land operational scale always tend to be optimal, not be restricted by the changing of land ownership scale (See Figure 8). Japanese economist Yujiro Hayami (2000) studied Japanese agriculture and pointed out that farmers' strong attachment to land and the appreciation expect of land make it impossible to enlarge farm operational scale through land ownership transaction. The only way to enlarge operational scale is through developing land leasing market. In other word, without tenancy system, land operational scale will be restricted by land ownership scale, which will cause the loss of production efficiency.

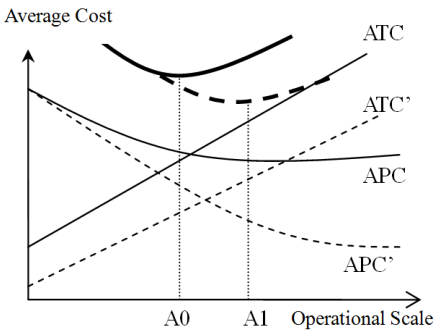


Figure 7 Determination of optimal land operational scale

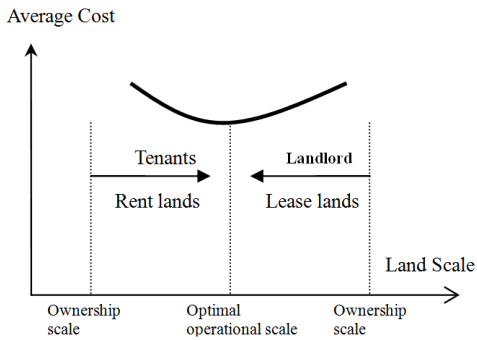


Figure 8 Adjustment of land operational scale through tenancy

3. "Good land chooses good tenant": tenant system realizes the selection of tillers.

Another important reason for tenant farmers' higher efficiency than yeomen is that tenancy system itself is the selection of land operators. Yeomen with higher operation ability will choose to enlarge the operational scale with the accumulation of their capital and production factors, either renting land to become tenant farmers or semi-tenant farmers, or buy more land to become landlords if the labor is limited. This view can be verified in CIESR(1939)'s field survey in Wuxing county, Zhejiang province. "Yeomen with enterprise but lack financing to acquire assets would usually rent land and turn to semi-tenant farmers." (CIESR, 1939, Page 751). Therefore in yeomen, those good at farming would gradually depart from this group and those not good at farming had to maintain this status, or even lost their land and become hired labors. By this token, semi-tenant farmers and tenant farmers were a group usually had more land operation ability than yeomen group.

A case in point is a Taiwan aboriginal inhabitant Mao Laowei's land transactions in the 36 years of 1762-1798. In the years of 1792 and 1783 he bought wasteland several times, but because he lacked farming ability, he had not become wealthy through farming, but he could not even make ends meet. Then he had to sell his land surface right or lease his land to more capable tenants. During 1782 to 1798 he had done 15 times of transactions, including 2 times of selling land surface right, 3 times of leasing land, 7 times of pawning land, and 6 times of borrowing money (Hong Liwan, 2002). Under tenancy system, farmers with higher capability of farming were gradually selected to engage in land operation, which was just "good lands select good tenants". Farmers with less capability of farming would gradually leave tillers' group, then the distribution of production factors tend to be more in reason.

Table 8 Taiwan aboriginal inhabitant Mao Laowei's land transactions during 1762-1798

Contract year	Main context of contract	Cause of contract	Term of years	Cost of transaction
1762	Buy wasteland	Seller needs farm cattle	permanent	One cow and one calf
1762	Buy wasteland	Seller needs money	permanent	5 yuan 3 hao silver
1783	Buy wasteland	Seller needs farm cattle	permanent	One cow and one calf
1783	Pawn water land	Short of money	1 year	200 yuan silver, add 3 dou[19] of millet every yuan
1786	Pawn land	Short of money and food	3 years	100 yuan silver, 40 dan millet
1790	Sell field surface	Short of money	permanent	39 yuan silver

[19] "dou": a Chinese unit measuring volumes of crops. 1 dan is about 7 kg.

1791	Sell water land surface	Short of money	permanent	36 yuan silver
1791	Lease wasteland	Incapable to till	10 years	First three years cultivate virgin soil, 25 dan millet the third year, 30 dan the fifth year, 36 dan annual rent since the sixth year
1792	Lease wasteland	Tenant asks intermediary to come	8 years	10 yuan silver, 1000 wen of annual tax
1793	Pawn field（Jiaoli woodland）	Short of money	Not defined	120 yuan silver, without interest
1795	Pawn wasteland	Short of money	8 years	10 yuan silver
1795	Add price for pawned field （Jiaoli woodland）	Short of money	Not defined	15 yuan silver
1798	Lease land	Land too narrow to till	7 years	1 yuan silver, 8 dou millet
1798	Add price for pawned field （Jiaoli woodland）	Short of money	Not defined	45 yuan silver

6. CONCLUSION

In a free market, the land ownership structure with the highest institutional surplus will be dominant. Total institutional surplus is determined by land transaction cost, return function of land investment, labor cost of farming, etc. Because these factors have great differences in different areas, land ownership structure should be diversified. Yeomanry, wage contract, share contract and fixed rental contract have their own conditions of compatibility.

Among the factors that have possible influences toward the selection of land ownership structure, two categories of factors are discussed in this paper. One is the factors that affect land investment return. Usually, the higher land investment returns rate are, the stronger landlords' willing of investment will be, so the higher tenancy rate will be. The quantitative analysis shows that the tenancy rates had positive correlation with commercialization degree of agricultural products, and negative correlation with transportation costs, in different places in

pre-modern China. The other is land ownership scale and land operational scale. The quantitative analysis shows that both in southern and in northern China in the 1930s, tenancy rates had negative correlation with average land ownership scale, and negative correlation with operational scale per unit labor.

By comparing the household sizes, land operational scales and farm earnings of tenant farms and yeoman farms in 1920s and 1930s , through different sources of data and in different places, this paper finds that tenant farms was sometimes more advanced than yeoman farms. In most cases, semi-tenants, who crop their own land and also rent others' land, had larger sizes of family, larger scales of farm and more earning than yeomen and pure tenants. A considerable portion of rich farmers were semi-tenants.

The reasons why tenancy had its competitive advantages in pre-modern China are then discussed. First, tenancy system enabled the separation of the investment function and the production function of land, thus lowered the cost for both tillers and land investors. Second, it adjusted the difference between land ownership scale and land operational scale. These two scales were determined in different mechanisms, and tenancy system enabled land operational scale not to be restricted by land ownership scale. Third, it realizes the selection of tillers.

REFERENCES:

[1] Buck, J. L., 1936, *Chinese Farm Economy*, 中译本：*《中国农家经济》*，张履鸾译，1936，商务印书馆。

[2] Buck, J. L., 1937, *Land Utilization in China Statistics*, 中译本：*《中国土地利用统计资料》*，乔启明译，1937，商务印书馆。

[3] Cheung, S., 1969, *The Theory of Share Tenancy*, 中译本：*《佃农理论》*，易宪容译，2000，商务印书馆。

[4] Demsetz, H, 1988, *Ownership, Control and the Firm: The Organization of Economic Activity*, 中译本：*《所有权, 控制与企业: 论经济活动的组织》*，段毅才译，1999，经济科学出版社。

[5] Hart, O., 1995, *Firms, Contracts and Financial Structure*, 中译本：*《企业, 合同与财务结构》*，费方域译，2006，上海三联书店。

[6] Hayami, Y., Ruttan, V. W., 1971, *Agricultural Development：An International Perspective*, 中译本：*《农业发展的国际分析》*，郭熙保，张进铭译，2000，中国社会科学出版社。

[7] Perkins, D. H., 1969, *Agricultural Development in China, 1368-1968*, 中译本：*《中国农业的发展: 1368-1968 年》*，宋海文译，1984，上海译文出版社。

[8] Sismondi，1951，*Nouveaux principes d'economie politique*，中译本：*《政治经济学新原理》*，何钦译，1964，商务印书馆。

[9] Stiglitz, J. E., 1974, Incentives and risk sharing in sharecropping, *The Review of Economic Studies*, 41(2), 219-255。

[10] 车尔尼雪夫斯基，1997，*《穆勒政治经济学概述》*，商务印书馆。

[11] 东北局宣传部，1946，*《东北农村调查》*。

[12] 冯紫岗，1936，嘉兴县农村调查，*《民国时期社会调查丛编 乡村经济卷（上）》*，李文海，223-611，福建教育出版社。

[13] 高王凌，2005，租佃关系新论，*《中国经济史研究》*，第 3 期，15-24。

[14] 国民政府主计处，1937，中国租佃制度之统计分析，*《农情报告》*，第 12 期。

[15] 国民政府主计处统计局，1936，*《中华民国统计提要》*，商务印书馆。

[16] 洪丽完，2002，*《台湾中部平埔族群古文书研究与导读: 道卡斯族崩山八社与柏瀑拉族四社》*，台中县立文化中心。

[17] 侯建新，2006，富裕佃农: 英国现代化的最早领头羊，*《史学集刊》*，第 4 期，42-50。

[18] 侯杨方，2001，*《中国人口史: 第六卷 (1910-1953)》*，上海: 复旦大学出版社。

[19] 李德英，2009，民国时期成都平原佃农经营：以温江为例，*《论中国土地制度改革》*，蔡继明，中国财政经济出版社。

[20] 龙登高，2009，地权交易与生产要素组合:1650—1950，*《经济研究》*，第 2 期，146-156。

[21] 龙登高&彭波，2010a，近世佃农的经营性质与收益比较，*《经济研究》*，第 1 期，138-147。

[22] 农村复兴委员会，1934，*《河南省农村调查》*，商务印书馆。

[23] 史建云，1998，近代华北平原佃农的土地经营及地租负担，*《近代史研究》*，第 6 期。

[24] 四川大学历史系，1989，*《清代乾嘉道巴县档案选编》*，四川大学出版社。

[25] 苏汝江，1932，昆阳农村经济之研究，*《民国时期社会调查丛编 乡村经济卷（上）》*，李文海，957-1022，福建教育出版社。

[26] 土地委员会，1936，*《全国土地调查报告纲要》*。

[27] 张汉林，1930，丹阳农村经济调查，*《民国时期社会调查丛编 乡村经济卷（上）》*，李文海，784-835，福建教育出版社。

[28] 赵冈，1997，从制度学派的角度看租佃制，*《中国农史》*，第 2 期。

[29] 赵冈，2005，*《永佃制研究》*，中国农业出版社。

[30] 赵津，2006，*《中国近代经济史》*，南开大学出版社。

[31] 中国第一历史档案馆，1982，*《乾隆刑科题本租佃关系史料之一：清代地租剥削形态》*，中华书局。

[32] 中国经济统计研究所(CIESR)，1939，吴兴农村经济，*《民国时期社会调查丛编 乡村经济卷（上）》*，李文海，698-783，福建教育出版社。